

Exploring The Potency of Indonesia Biodiversity for Herbal Medicine/Jamu

Indah Yuning Prapti, SKM, MKes

Medicinal Plant and Traditional Medicine Research and Development Centre National
Institute of Health Research and Development Ministry of Health

EXPLORING the POTENCY of INDONESIA BIODIVERSITY for HERBAL MEDICINE/JAMU

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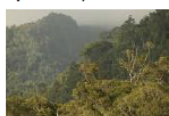


Outline

- Background
- Medicinal plant Biodiversity in Indonesia
- Indonesia Community based exploration of medicinal plants and folk medicine in Indonesia
- Development of Medicinal plant and Jamu
- Implementation of Jamu in People Health Care

Background

- Indonesia tropical rainforest is the second largest tropical rainforest in the world
- Posses 10% of the world flowering plants, estimated reach to 30.000 species
- Richest in biodiversity included of medicinal plants (9.000 species)



MARKET OF HERBAL SUPPLEMENTS & REMEDIES (US \$ Billion)

REGION	2012	2013	2014	2015
GLOBAL *	48.50	60.00	87.00	93.00
USA *	23.50	25.00	26.50	28.00
INDONESIA	1.30	1.50	1.80	2.20

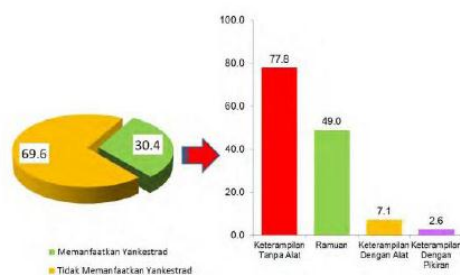
* Nutraceuticals World, 2012



Is Indonesia still a mega biodiversity country presently?
Considering:

- Massive or Rapid Deforestation
- Biopiracy of natural resources, traditional knowledge, and local wisdom
- Natural disaster

Proportion of TCM Services Used by Indonesia Family based on RISKESDAS 2013

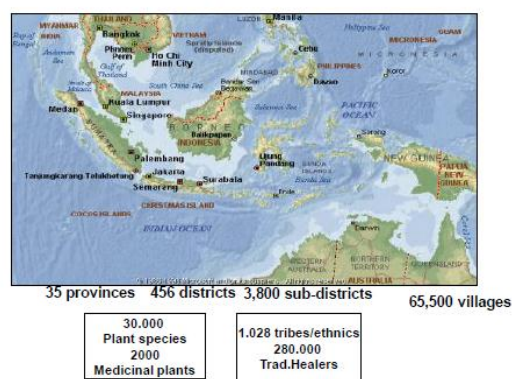


Amanat Presiden RI pada Kunjungan ke B2P2TO-OT Tawangmangu:

"Peningkatan Pemanfaatan Sumber Daya Hayati (Biodiversity) untuk Meningkatkan kesejahteraan masyarakat, melalui produksi jamu, Obat tradisional dan herbal".



INDONESIA



Medicinal Plant Biodiversity in Indonesia

Fern and sea weed for future herbs and medicine



Helminthothecys sp.



Polypodium leucotomos



Sellaginella tamarischina



Rare and exotic medicinal plants from Indonesia rain forest



Draemonorops draco (Jernang)



Codonopsis javanica (Kolesom)



Eurycoma longifolia



Woodfordia floribunda



Alyxia reinwardtii

New species found from Piperaceae family used as cough medicine



Piper sp.



Piper sp.

Introduced Medicinal Plants



Silibum marianum



Echinacea purpurea



Digitalis purpurea

Why biodiversity conservation matter?

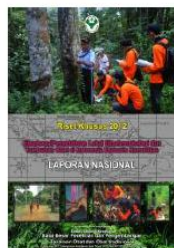
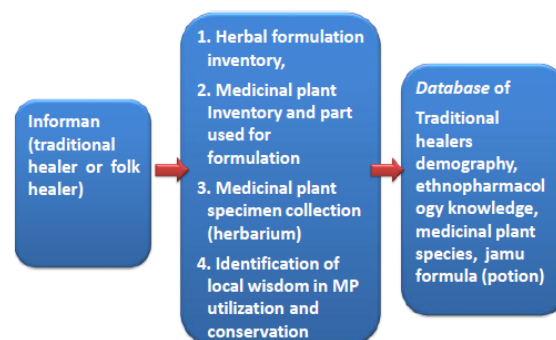
- There are 283 medicinal plants species used for raw material of herbal medicine by Jamu Industries.
- 85% of them still collected from the wild habitat and mostly are wild species.
- 45 medicinal plants species have been threat for its over exploitation and collection

Indonesia Community based exploration of medicinal plants and folk medicine in Indonesia

Benefit:

1. Database of medicinal plants and indogenous medicine for further research and development
2. Local wisdom of medicinal plant utilization and conservation information for initiation of National policy on Medicinal Plants Conservation.
3. Fitogeography data of Indonesian medicinal plants
4. New chemical entity for new drugs development and genetic profiling of Indigenous Medicinal Plants for Biopiracy Protection.

Conceptual Framework



OBSERVATION AREA

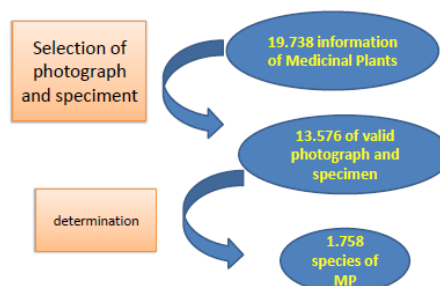
REGION	TOTAL		
	ETHNIC	OBSERVATION SPOT	Trad. Healers
Sumatera	50	66	419
Kalimantan	45	56	474
Sulawesi	46	56	251
NT & Maluku	43	52	266
Papua	24	24	129
TOTAL	209	254	1.324

Medicinal Plants Information based on Ristoja 2012

REGION	TOTAL			
	Trad. Healers	MP inform.	Identified MP	Specimen collected
Sumatera	419	7.237	4.822	3.827
Kalimantan	474	3.505	2.131	2.222
Sulawesi	251	4.228	3.124	3.387
NT & Maluku	266	3.229	2.404	2.536
Papua	129	1.539	1.095	1.426
TOTAL	1.324	19.738	13.576	13.398

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Identification of Specimen



TM FORMULA for 10 MAIN DISEASE/SYMPOM

No	Symptom	TM Formula
1.	Fever	1404
2.	Stomach ache	1158
3.	Skin disease	1092
4.	Wound	914
5.	Diarea	631
6.	Cough	609
7.	Post partum	521
8.	Tumor/cancer	506
9.	Infant/child nursing	482
10.	Hypertention	462

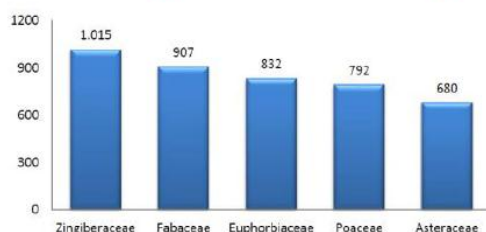
- Hygine - Infection
- Injury - Metabolism

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10 SPECIES MOST WIDELY USED

No.	Botanical name	Local Name	Ethnic used
1.	<i>Curcuma domestica</i>	Turmeric	191
2.	<i>Piper betle</i>	Betle leave	182
3.	<i>Cocos nucifera</i>	Coconut	181
4.	<i>Zingiber officinale</i>	Ginger	169
5.	<i>Jatropha curcas</i>	Jarak	165
6.	<i>Imperata cylindrica</i>	Alang-alang	161
7.	<i>Psidium guajava</i>	Guava	155
8.	<i>Carica papaya</i>	Papaya	147
9.	<i>Areca catechu</i>	Betle nut	138
10.	<i>Orthosiphon aristatus</i>	Java tea	135

The Biggest 5 Plants Family



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A RARE MEDICINAL PLANT

No.	Provinsi	Jumlah TO yang sulit diperoleh
1.	Aceh	17
2.	Sumatera Utara	82
3.	Sumatera Barat	34
4.	Riau dan Kep. Riau	54
5.	Jambi	17
6.	Sumatera Selatan	70
7.	Bengkulu	68
8.	Lampung	51
9.	Bangka Belitung	15
10.	Kalimantan Barat	76
11.	Kalimantan Tengah	61
12.	Kalimantan Selatan	17
13.	Kalimantan Timur	119
14.	NTB	13
15.	NTT	118
16.	Sulawesi Selatan	37
17.	Sulawesi Barat	34
18.	Sulawesi Tengah	34
19.	Sulawesi Tenggara	44
20.	Gorontalo	14
21.	Sulawesi Utara	30
22.	Maluku	71
23.	Maluku Utara	38
24.	Papua Barat	38
25.	Papua	15
Jumlah		1.147

Ristoja Bengkulu 2012

- Number of ethnic = 7 namely Pasemah, Muko-muko, Enggano, Rejang, Lembak, Serawai, Pekal.
- Spot observation = 13 areas
- 983 medicinal plants which could be identified
- 966 Jamu Formula were recorded from 13 observation spot.

Spot observation of Ristoja at Bengkulu Province year 2012

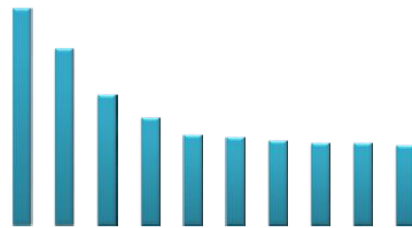


- Enggano
- Muko-muko
- Pekal
- Rejang
- Rejang
- Rejang
- Lembak
- Serawai 1
- Serawai 2
- Serawai 3
- Pasemah 1
- Pasemah 2
- Pasemah 3

Result...

No	Etnis	Jumlah			
		Ramuan	Informasi TO	TO teridentifikasi	Herbarium
1	Enggano	47	48	40	21
2	Mukomuko	46	162	95	70
3	Pekal	37	57	48	34
4	Rejang	214	337	245	231
5	Lembak	164	180	93	47
6	Serawai	242	327	191	202
7	Pasemah	213	454	271	281
Jumlah		963	1.565	983	823

10 biggest Plants Family



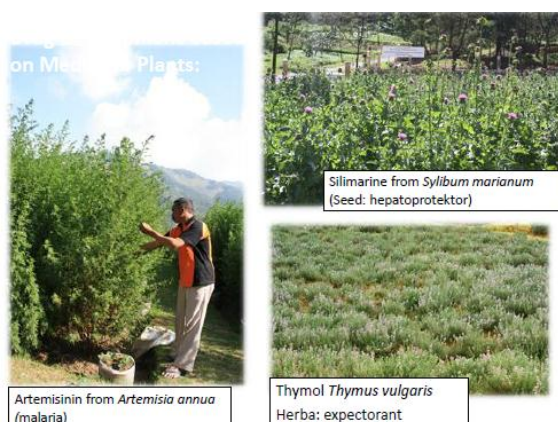
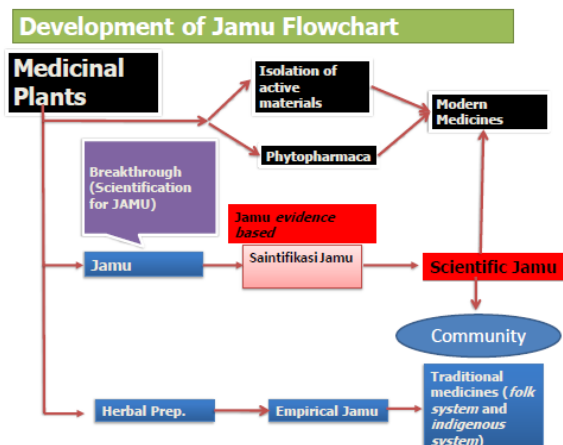
The way forwards?

- Sustainable resources and conservation
- Phytochemical investigation
- Genetic profiling
- Pre clinical study for herbal formula
- Clinical study for herbal formula
- Portal database of medicinal plants and indigenous herbal formula

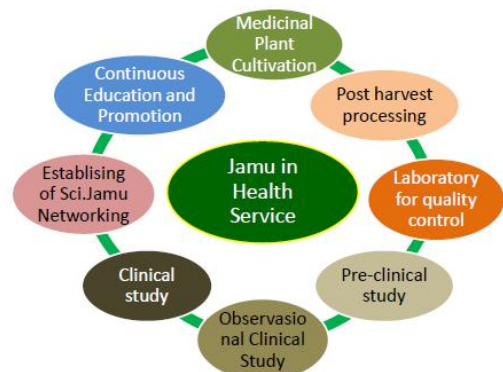
Development of Medicinal Plant Biodiversity

"The doctor of the future will give no medicine, but will interest his patient in the care of the human frame, in diet and in the cause and prevention of disease"

(Thomas Alfa Edison, 1847-1931)



The Integrated System of Jamu Research

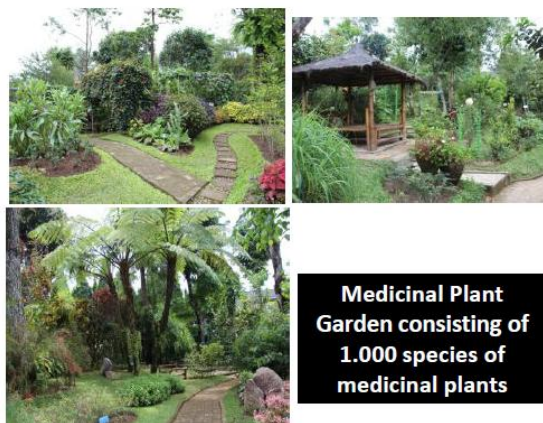


Implementation of Jamu in People Health Care

Clinical study of Jamu at Hortus Medicus clinic in Tawangmangu



Saintifikasi JAMU training for Medical Doctor



Medicinal Plant
Garden consisting of
1.000 species of
medicinal plants





Thank you